CLAIMS

1. A method for quantitating an analyte comprising measuring fluorescence emission from a fluorescent label specifically associated with an analyte bound directly or indirectly to a cross-linked allophycocyanin molecule, where the cross-linked allophycocyanin has not been exposed to strongly chaotropic materials after cross-linking.

2. A method for quantitating an analyte by measuring time resolved fluorescence of a label quantitatively associated with the analyte, said method comprising measuring energy absorbed by donor compounds having the ability to absorb light energy and then transferred to cross-linked allophycocyanin by detecting allophycocyanin fluorescence in a time-resolved manner, wherein said cross-linked allophycocyanin has not been exposed to strongly chaotropic agents after cross-linking.

3. In a method for quantitating an analyte by measuring time resolved transfer of fluorescence energy to or from a label quantitatively associated with the analyte, the improvement comprising measuring the energy transferred from donor compounds having the ability to absorb light energy and then transfer this energy to cross-linked allophycocyanin in a time-resolved manner, where the cross-linked allophycocyanin used according to this invention has not been exposed to strongly chaotropic agents after cross-linking.

4. The method of claim 2 or 3, wherein the donor molecule comprises a metal.

5. The method of claim 4, wherein the metal is a lanthanide series metal.

6. The method of claim 5, wherein the lanthanide metal is selected from the group consisting of europium or ruthenium, which may optionally be chelated or in a cryptate.

7. The method of any one of claims 1-3, wherein non-cross-linked monomeric subunits have not been removed from the cross-linked allophycocyanin molecule.

8. The method of any one of claims 1-3, wherein the cross-linked allophycocyanin preparation has at least 20% but less than 50% of all alpha subunits of the allophycocyanin molecules linked to no more than one beta subunit.

9. The method of any one of claims 1-3, wherein the cross-linked allophycocyanin has an absorbance spectrum characterized by a ratio of areas under the absorbance spectrum between 500-700 nm to the area between 250-300 nm of at least 4.

10. The method of any one of claims 2 or 3, wherein said method is performed in homogeneous solution or suspension.

11. The method of claim 2 or 3, wherein at least two distinct donor species are present, said distinct donor species having different fluorescence lifetimes.

12. The method of claim 11, wherein said distinct donor species absorb at the same wavelength.

13. The method of claim 2 or 3, wherein at least two distinct donor species are present, said distinct donor species having different absorption spectrum.

14. The method of claim 2 or 3, wherein at least two distinct donor species are present, said distinct donor species forming donor/acceptor pairs having the same lifetime and color but being distinguishable by fluorescent intensity.